

NASA’s Impact in New Mexico: A Tech Transfer Perspective

You know that NASA studies our planet, our sun, the solar system, and the Universe.
But did you know about the space program’s economic impact here on Earth?



In 2011, NASA invested over **\$73 million** in the state of New Mexico.

Since 2001, NASA’s SBIR/STTR Program has invested over
\$20 million in **13 New Mexico companies**
and more than **\$1.2 billion** nationwide.

How NASA’s SBIR/STTR Program Benefits New Mexico

NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

SBIR/STTR stimulates technological innovation by encouraging small, high-tech companies—particularly minority and disadvantaged businesses—to partner with NASA to help meet its research and development needs in key technology areas. At the same time, this program strengthens small companies by enabling them to bring cutting-edge new products into the U.S. economy.

The list to the right highlights New Mexico businesses that received SBIR/STTR contracts from NASA since 2001. (Visit <http://sbir.nasa.gov> for more information on the SBIR/STTR program.)

NASA SBIR/STTR Companies in New Mexico

Mesa Photonics, LLC	Santa Fe
TH Chem, Inc.	Albuquerque
Photonic Associates, LLC	Santa Fe
Santa Fe Science and Technology, Inc. ...	Santa Fe
Applied Technology Associates	Albuquerque
Vista Photonics, Inc.	Santa Fe
STAR Cryoelectronics, LLC.....	Santa Fe
Thor Technologies, Inc.	Albuquerque
TPL, Inc.	Albuquerque
Adherent Technologies, Inc.	Albuquerque
Optomec	Albuquerque
Rapid Imaging Software, Inc.	Albuquerque
Southwest Sciences, Inc.	Santa Fe

new mexico





Tracking Electromagnetic Energy with SQUIDs (Santa Fe)

Superconducting quantum interference devices (SQUIDs) measure extremely weak signals such as magnetic flux. NASA uses SQUIDs for remote, noncontact sensing in a variety of venues, including monitoring the Earth's magnetic field and tracking brain activity of pilots. STAR Cryoelectronics, LLC specializes in developing, manufacturing, and marketing ultra-sensitive SQUID sensors and advanced PC-based SQUID control electronics. Using SBIR funding, the company provided NASA with advanced electronics and SQUID sensors to measure voltage gain through arrays and cryogenic amplifiers.

The company's product is the most sensitive detector of magnetic flux available, making it ideal for a variety of uses including high-resolution measurements of current, voltage, magnetic fields, gravitational fields, and magnetic susceptibility. STAR Cryoelectronics' products are also used for medical research, surface and sub-surface feature images, and inspections of aircraft, ship hulls, and bridges. Their SQUIDs are in use at major university, government, and corporate research laboratories throughout the world.



Understanding Fire Gases with a Diode Laser (Santa Fe)

By studying fire through the science of combustion physics, NASA scientists and researchers find new ways to improve fire safety and increase fuel efficiency. As part of their work to measure fire behaviors, NASA needed a laser capable of sensing trace gases at unique wavelengths. Although diode lasers were rugged, small, and low power, they could not produce the necessary range of wavelengths.

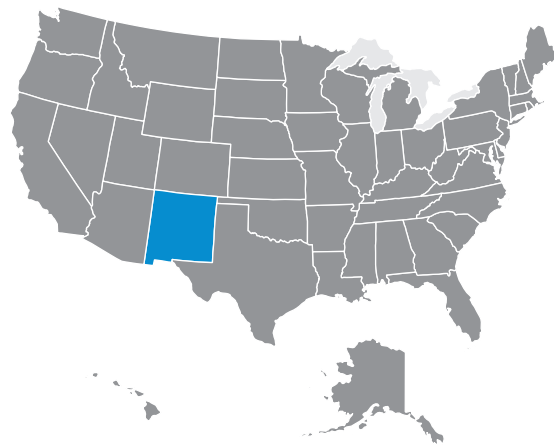
With NASA SBIR funding, Southwest Sciences, Inc. developed a diode laser that detects gases in microgravity. Southwest Sciences' laser met very specific measurement requirements, with coarse tuning ranges of 10-30 nanometers at wavelengths ranging from 630-2,300 nanometers. The laser's broad wavelength tuning provides access to multiple trace gas species including some gases that only evolve during an actual fire. Potential applications include reducing the number of false fire alarms on commercial aircraft and detecting incipient fires in space.



Unique Glass Protects Instruments in Space and Provides Beauty on Earth (Santa Fe)

Dichroic glass was collaboratively developed in the 1960s to shield sensitive spacecraft instruments from cosmic radiation and to protect astronauts' vision from unfiltered sunlight in space. One aerospace engineer working on this project was impressed by the beauty of this unique glass and he formed a company, Kroma, Inc., to make this glass for artistic use.

Creating the glass involves depositing superthin layers of up to 50 metal oxides, one layer at a time and in a specific order and thickness, to get the desired artistic effect. The process of coating glass with thin films of metal produces a chameleon effect. The color of the glass changes with the amount of light being absorbed or reflected, generating shifting patterns of exceptional beauty. The unique art glass, which has spawned a following of art collectors, can be found in stained glass windows, mobiles, masks, jewelry, lamps, and other ornamental products.



NASA actively seeks partnerships with U.S. companies that can license NASA innovations and create "spinoffs" in areas such as health and medicine, consumer goods, transportation, renewable energy, and manufacturing. When businesses leverage NASA technologies to develop new products, it not only benefits the regional economy, but significantly strengthens the nation's competitiveness in the global marketplace.

NASA's centers across the country have helped 62 New Mexico companies develop revolutionary spinoff technologies.

Learn more about how NASA innovations benefit the public in *Spinoff*, an annual publication that highlights NASA's most significant technology transfer successes. (Available at: <http://www.sti.nasa.gov/tto>)

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